

Reading comprehension by people with chronic aphasia:
A comparison of three levels of visuographic contextual support

by

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PREVIEW

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Reading comprehension by people with chronic aphasia:
A comparison of three levels of visuographic contextual support

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University of Nebraska, 2007

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This repeated measures investigation evaluated the impact of three levels of visuographic context—(a) photos of high-context scenes, (b) photos of low-context scenes, and (c) no-context—on the reading comprehension of narratives by people with chronic aphasia. The researcher defined high-context scenes as photographs in which people interact with each other, the natural environment, and the central action of the scene and low-context scenes as photographs with no central action and limited-to-no interaction between the people and the natural environment. Participants included 10 medically-stable adults with chronic aphasia and concomitant reading comprehension deficits. The participants read three different narratives, each presented with high, low, or no-context. The dependent measures were: (a) responses to a self-assessment questionnaire items using a Likert Scale, (b) reading comprehension accuracy measured in percent questions correct, and (c) response time measured in seconds. Outcomes revealed that participants overwhelmingly perceived pictures as helpful during the high-context condition and moderately helpful during the low-context condition. Further, the majority of the participants reported that pictures would have assisted them during the no-context condition. Likewise, people with chronic aphasia also reported that the narrative reading tasks were easier in the

high- and low-context conditions than in the no-context condition. The results did not reveal a statistically significant difference across experimental conditions for accuracy. A potential explanation for this relates to the heterogeneity that existed within the participant pool regarding residual reading ability. Analysis of individual accuracy scores revealed a subgroup of participants who appeared to benefit from visuographic context. The results yielded significant differences for response time across the conditions. The outcomes of the current investigation suggest that contextually-rich visuographic information is supportive to at least some individuals with chronic aphasia when they perform reading comprehension tasks. The results are discussed in relation to the theoretical frameworks of the resource allocation theory of aphasia and construction-integration model of reading.

PREVIEW

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DEDICATION

Many of you may be surprised to hear that my Mom encouraged me to dance from a very young age and that I originally left Florida to continue my training. My very first dance partner was my Mom. As the song goes, “I hope you never lose your sense of wonder...I hope you never fear those mountains in the distance...and when you get the choice to sit it out or dance, I hope you dance...” (Sanders & Sillers, 2000). Throughout my life, my Mom has always taught me to keep going and maintain faith in myself. I learned the most important element of dancing from her—not to let go of key dance partners. In fact, she is responsible for several of the dance partners in my life today. My Daddy and my Dad—you know who you are—two incredible men who taught me to dance through the pain and the heartache that life inevitably brings your way; and of course how to recover when unreliable partners drop you in the middle of a routine. My *Instant Mom*, Kelly, a partner who always insisted that I expect only the best things in life, I am glad I followed her advice. My brother Alex has always reminded me to see the lighter side of life—and to remember, “Where I come from.” Thanks to his southern influence, I incorporate wisdom from my country-roots into every dance I learn.

In the beginning of our relationship, Marcus told me that I was “... the beacon in [his] journey of life.” Since then, we have stumbled our way through challenging dances, serious dances, and of course many playful dances; and we continue to waltz our way through the wonderful life we have built for ourselves. Marcus brought with him an unexpected dance partner, a beautiful little girl

named Mackenzie. She always adds a sparkling smile and fun to each performance.

I am very grateful for all of you and before I move on to the next dance, I want to thank you for teaching me the intricate, yet beautiful choreography of *Life*.

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As I look back on this incredible journey, I must thank a few people who played a pivotal role in this accomplishment. First, I thank Dr. “Chick” LaPointe and Dr. Richard Morris for exposing me to the “research bug” during my tenure as a graduate student at Florida State University (FSU). Their passion for science and ability to apply it to the clinical world excited me and sparked the fire to earn a Ph.D. I will always be grateful to my dear friend, Kerry Lenius, for keeping my research fire lit after we both graduated from FSU.

A few years later, I had the good fortune of meeting Dr. David Beukelman at an ASHA convention in Chicago. After that convention, I visited the Department of Communication Disorders at the University of Nebraska-Lincoln (UNL). It was then that I met Dr. Karen Hux and chose UNL as my top choice for a doctoral training program. Their combined expertise in acquired neurogenic disorders as well as their applied-research nature made the decision an easy one. As I begin the next phase of my life, I aspire to develop a blend of the visionary research skills, incredible mentoring, and inspiring teaching styles that Dr. Beukelman and Dr. Hux bring to the table. They truly exemplify how the right-hemisphere relies on the left-hemisphere, and vice versa, to produce quality work. This manuscript would not be complete without expression of my gratitude for Dr. Michelle McKelvey, a true friend, whose support kept my research fire burning throughout my doctoral program.

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PREVIEW

CHAPTER 1

Motivation

Background

Introduction to Aphasia

Aphasia is an acquired language disorder that often follows a cerebrovascular accident (CVA) in the left side of the brain. Aphasia impairs a person's ability to comprehend and produce spoken and written language. The clinical features of aphasia are not due to a sensory deficit; rather there is a disruption of auditory and visual processing, as well as verbal and written production abilities. In summary, aphasia disrupts the symbolic systems of speaking, listening, reading, and writing (Chapey & Hallowell, 2001; LaPointe, 2005; McNeil, 1983). People with aphasia have the same thoughts and ideas as they did before the CVA. However, they cannot express those ideas as fluidly. Having aphasia is analogous to visiting a foreign country and not knowing the language; you know what you want to say but do not have the words to say it aloud. Likewise, you hear people speaking and see signs displayed on streets and buildings, but you may only understand bits and pieces of what you hear and read.

Aphasia Interventions

Restoration approach. Traditionally, the aim of aphasia intervention is to restore language functions and curb the effects of aphasia (Beukelman, Fager, Ball, & Dietz, 2007; Dietz, McKelvey, & Beukelman, 2006; Dietz, McKelvey, Beukelman, Weissling, & Hux, 2006; McKelvey, Dietz, Hux, Weissling, &

Beukelman, 2007). A review of the literature revealed the effectiveness of restorative intervention strategies, especially during the acute stages of recovery (Holland, Fromm, DeRuyter, & Stein, 1996; Horner, Loverso, & Gonzalez-Rothi, 1994; Poeck, Huber, & Williams, 1989; Robey, 1998). However, there is a fundamental problem with the restoration approach; it is typically ineffective in fully restoring the linguistic system. That is, 40% of people with aphasia eventually plateau in their ability to re-establish their linguistic system and must live with aphasia as a chronic condition (Helm-Estabrooks, 1984). In short, they have a linguistic system that leaves them unable to interact fully during daily communicative activities (Beukelman et al., 2007; Dietz, McKelvey, & Beukelman, 2006; Dietz, McKelvey, Beukelman, Weissling, et al., 2006; Garrett & Lasker, 2005a; 2005b; McKelvey et al., 2007).

Compensatory approach. An alternative to the restoration approach is to compensate for the residual linguistic deficits of chronic aphasia. Clinicians often accomplish this through the implementation of augmentative and alternative communication (AAC) devices and techniques. These include the use of remnant materials, drawing, gestures, written words, and written choices as well as low-technology communication books and boards (Beukelman, Yorkston, & Dowden, 1985; Garrett, 1993; Garrett & Huth, 2002; Garrett & Lasker, 2005b; Ho, Weiss, & Garrett, 2005; Lasker, Hux, Garrett, Moncrief, Eischoid, 1997; Lyon & Helm-Estabrooks, 1987; Lyon, 1992; 1995; 1998). People with aphasia also demonstrate the ability to use traditional high-tech AAC. Typically, these devices are used to perform specific communicative functions such as answering the

phone, calling for help, ordering in restaurants or stores, giving speeches, saying prayers, and engaging in scripted conversations (Jackson-Waite, Robson, & Pring, 2003; Lasker & Beukelman, 1999; Lasker & Bedrosian, 2001). Often, the degree to which the strategy or technique bypasses the reliance on symbolic and linguistic processes dictates the level of success people with chronic aphasia experience with the aforementioned strategies (Dietz, McKelvey, & Beukelman, 2006; Dietz, McKelvey, Beukelman, Weissling et al., 2006; McKelvey et al., 2007).

Motivation

Visual Scene Displays

The need to minimize the high-linguistic demands of current AAC technology prompted the development of the Visual Scene Displays (VSD). The VSD is a high-technology speech generating device (SGD) prototype that employs contextually-rich visuographic images to represent meaning, facilitate co-construction of messages between people with chronic aphasia and their communication partners, and support system navigation.

Visual scene displays development. Over the past 30 months, I collaborated with members of the VSD research and technology partners during the development of the VSD. In an attempt to *bypass* the *broken* language system of people with aphasia, we built upon their relatively intact cognitive and visuospatial abilities (Fox & Fried-Oken, 1996). That is, rather than relying on words and/or iconic symbols to represent meaning, formulate messages, and navigate the AAC device, the person with aphasia communicates and navigates

the VSD using *high-context scenes* (Dietz, McKelvey, & Beukelman, 2006; Dietz, McKelvey, Beukelman, Weissling et al., 2006; McKelvey et al., 2007).

High-context scenes. To appreciate the notion of high-context scenes, it is helpful to break the concept into its separate components. The word *context* has two primary definitions. The first Merriam Webster® (2006) states is, "...the parts of a discourse that surround a word or passage...can throw light on its meaning." The second definition of context discusses, "...the interrelated conditions in which something exists or occurs." (Merriam-Webster® Incorporation, 2006). *Scene* is most commonly described as, "...an act presenting continuous action" (Merriam-Webster® Incorporation, 2006). Thus, high-context scenes are photographs in which people interact with each other, the natural environment, and the central action of the scene (see Figure 1.1). Typically, high-context scenes independently reveal the relationships between the people and objects within the photo (Dietz, McKelvey, & Beukelman, 2006; Dietz, McKelvey, Beukelman, Weissling et al., 2006; McKelvey et al., 2007).

Low-context scenes. In contrast to high-context scenes, low-context scenes require the viewer to surmise additional information about the relationship between people or objects in the photograph. There is limited-to-no interaction between the people and the natural environment; lastly, there is no central action. An example is a portrait of a person standing in front of a plain background (see Figure 1.2). Thus, low-context scenes provide limited